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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/696,977

10/30/2003

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062020-1570

7858

24504 7590 05/09/2007  
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EXAMINER

TORRES, JOSE

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

05/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/696,977 | <b>Applicant(s)</b><br>TSAI ET AL. |  |
|                              | <b>Examiner</b><br>Jose M. Torres    | <b>Art Unit</b><br>2624            |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 February 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5-7, 9-13 and 15-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7, 9, 10, 13, 15-19, 22 and 24 is/are rejected.
- 7) ☒ Claim(s) 11, 12, 20, 21, 23 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02/20/2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Comments***

1. The Amendments filed on February 20, 2007 have been entered and made of record.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5, 6, 15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "the first threshold value" in line 2. There is insufficient antecedent basis for this limitation in the claim. Also, claim 5 is dependant upon cancelled claim 4. It has been treated as dependant upon claim 1.

Claim 6 is dependant upon claim 5.

Claim 15 recites the limitation "the matrix" in line 3. There is insufficient antecedent basis for this limitation in the claim. However, it appears to be "the at least one segmentation matrix" and has been treated as such.

Claim 16 is dependant upon claim 15.

Appropriate correction is required.

### ***Claim Objections***

4. Claim 15 is objected to because of the following informalities: "E(x,y);" in line 5 should end with a period -- E(x,y). --. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3, 9, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berube et al. (US 7,130,454) in view of de la Escalera et al. ("*Road Traffic Sign Detection and Classification*", IEEE Trans. on Industrial Electronics, Vol. 44, No. 6, Dec. 1997, pp 848-859).

Re claim 1, Berube et al. teaches a method for recognizing a road sign in a digital color image, where the road sign is associated with a shape template and at least one color criterion (Col. 7 lines 33-41), the method comprising the steps of: capturing a digital color image (FIGs. 1 and 2, "image acquisition stage **22** and video camera **40**", Col. 7 lines 42-62); performing color segmentation on the digital color image to produce

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at least one segmentation matrix ("blob", Col. 9 lines 24-57); correlating at least one region of interest within the segmentation matrix with a template matrix ("Reference Set", Col. 15 line 59 through Col. 16 line 27), where the template matrix is specific to a reference sign; and recognizing the image as containing the reference sign ("Recognized", Col. 15 lines 21-38), responsive to the correlating step.

As to claim 1, Berube et al. does not explicitly disclose wherein the performing color segmentation comprises comparing a plurality of color components at each of a plurality of pixel locations within the digital color image to the color criterion, the color criterion comprising at least one relationship between two color components selected from the group of R, G, B.

De la Escalera et al. teaches comparing a plurality of component at each of a plurality of pixel locations within the digital color image to the color criterion (" $g(x, y)$ "), the color criterion comprising at least one relationship between two color components ("color ratio") selected from the group of R, G, B (Section II 'Traffic Sign Detection', Subsection A 'Color Thresholding', page 849).

Therefore, in view of de la Escalera et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Berube et al.'s method by incorporating the color thresholding, as taught by de la Escalera et al., which comprises a relationship between two color components selected from the group of R, G, B in order to achieve a system where special hardware is not used and the computational expense is minimum (Section II 'Traffic Sign Detection', Subsection A 'Color Thresholding', page 849).

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As to claim 3, Berube et al. does not explicitly disclose wherein the at least one color criterion comprises a plurality of color criteria and the performing step further comprises: setting each element of the at least one segmentation matrix to a first value if the corresponding pixel position in the digital color image matches any of the plurality of color criteria associated with the road sign.

De la Escalera et al., further teaches the at least one color criterion (" $g(x, y)$ ") comprises a plurality of color criteria (" $k_1$  and  $k_2$ ") and the performing step further comprises: setting each element of the at least one segmentation matrix (FIG. 1) to a first value (" $k_1$ ") if the corresponding pixel position in the digital color image matches any of the plurality of color criteria associated with the road sign (Section II 'Traffic Sign Detection', Subsection A 'Color Thresholding', page 849).

Therefore, in view of de la Escalera et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Berube et al.'s method by incorporating the method steps of setting each element of the at least one segmentation matrix to a first value  $k_1$  if the corresponding pixel position in the digital color image matches any of the plurality of color criteria associated with the road sign in order to achieve the color thresholding using a 16-bit LUT and in real-time (Section II 'Traffic Sign Detection', Subsection A 'Color Thresholding', page 849).

As to claim 9, Berube et al. does not explicitly disclose the segmentation matrix contains only binary values.

De la Escalera et al. further teaches the segmentation matrix contains only binary values (FIG. 1, " $k_1$  and  $k_2$ ", Section II 'Traffic Sign Detection', Subsection A 'Color Thresholding', page 849).

Re claims 17 and 18, Berube et al. teaches a computer readable medium/system (FIG. 1, "system **20**") having a computer program for recognizing a road sign in a digital color image, where the road sign is associated with a shape template and at least one color criterion (Col. 7 lines 33-41), comprising: logic configured to capture/means for capturing a digital color image (FIGs. 1 and 2, "image acquisition stage **22** and video camera **40**", Col. 7 lines 42-62); logic configured to perform/means for performing color segmentation on the digital color image to produce at least one segmentation matrix ("blob", Col. 9 lines 24-57); logic configured to correlate/means for correlating at least one region of interest within the digital color image with a template matrix, where the template matrix is specific to a reference sign ("Reference Set", Col. 15 line 59 through Col. 16 line 27); and logic configured to recognize/means for recognizing the image as containing the reference sign, responsive to the correlation logic ("Recognized", Col. 15 lines 21-38).

As to claims 17 and 18, Berube et al. does not explicitly disclose wherein the logic configured to perform/means for performing color segmentation further comprises logic configured to compare a plurality of color components at each of a plurality of pixel locations within the digital color image to the color criterion, the color criterion

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comprising at least one relationship between two color components selected from the group of R, G, B.

De la Escalera et al. teaches the logic configured to perform color segmentation further comprises logic configured to compare a plurality of color components at each of a plurality of pixel locations within the digital color image to the color criterion (" $g(x, y)$ "), the color criterion comprising at least one relationship between two color components ("color ratio") selected from the group of R, G, B (Section II 'Traffic Sign Detection', Subsection A 'Color Thresholding', page 849).

Therefore, in view of de la Escalera et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Berube et al.'s system by incorporating the color thresholding, as taught by de la Escalera et al., which comprises a relationship between two color components selected from the group of R, G, B in order to achieve a system where special hardware is not used and the computational expense is minimum (Section II 'Traffic Sign Detection', Subsection A 'Color Thresholding', page 849).

As to claims 19, 22 and 24, Berube et al. does not explicitly disclose the color criterion further comprising a first color component selected from R, G, B being greater than a first threshold value, the first threshold value expressed in terms of a second color component selected from R, G, B that is different than the first color component.

De la Escalera et al. further teaches the color criterion further comprising a first color component selected from R, G, B being greater than a first threshold value, the



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first threshold value expressed in terms of a second color component selected from R, G, B that is different than the first color component ("the pixels searched have a high red value with respect to their green and blue values." Section II 'Traffic Sign Detection', Subsection A 'Color Thresholding', page 849).

7. Claims 2 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berube et al. in view of de la Escalera et al. as applied to claim 1 above, and further in view of Laumeyer et al. (US 6,453,056). The teachings of Berube et al. modified by de la Escalera et al. have been discussed above.

Berube et al. further teaches correlating the at least one submatrix ("ROI") with a template matrix ("reference set") to produce a correlation coefficient (Equation 7), where the template matrix is specific to a reference sign (" $I_R(x_i, y_i)$ ", Col. 15 line 59 through Col. 16 line 27); and recognizing the image as containing the reference sign, based upon a comparison of the correlation coefficient and a correlation threshold value ("predetermined thresholding value", Col. 16 lines 16-27).

As to claim 2, Berube et al. modified by de la Escalera et al. fails to disclose extracting at least one region of interest from the at least one segmentation matrix to produce at least one submatrix containing at least one potential road sign.

Laumeyer et al. teaches extracting at least one region of interest ("dynamically-sized region of interest (ROI)") from the at least one segmentation matrix to produce at least one submatrix containing at least one potential road sign (Col. 13 lines 12-45).

Therefore, in view of Laumeyer et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Berube et al. and de la Escalera et al. by incorporating the method step of extracting at least one dynamically-sized region of interest from the at least one segmentation matrix to produce at least one submatrix containing at least one potential road sign in order to create a "sign list" which is used to correlate with a reference sign, wherein if it is confirmed that the portion of the image does not contain the sign, the ROI can be enlarged for further processing (Col. 13 lines 12-45).

As to claim 13, Berube et al. further teaches calculating a two-dimensional correlation coefficient (Equation 7), which measures the correlation between the submatrix and a two-dimensional template matrix (Col. 15 line 59 through Col. 16 lines 27).

8. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berube et al. in view of de la Escalera et al. as applied to claim 1 above, and further in view of Nakajima et al. (US 6,285,778). The teachings of Berube et al. modified by de la Escalera et al. have been discussed above.

As to claim 5, Berube et al. modified by de la Escalera et al. fails to disclose the at least one color criterion is locally adaptive such that the first threshold value varies at each location within the template matrix.

Nakajima et al. teaches the at least one color criterion ("average threshold") is locally adaptive such that the first threshold value varies at each location within the template matrix ("window of  $m \times n$  pixels", Col. 5 lines 10-20).

Therefore, in view of Nakajima et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Berube et al. and de la Escalera et al. by incorporating the method step of thresholding the intensity of the pixels using the average threshold which is locally adaptive within the window of  $m \times n$  pixels in order to achieve a better implementation when there exists a large brightness difference within the original image (Col. 5 lines 10-20).

As to claim 6, Berube et al. modified by de la Escalera et al. fails to disclose the first threshold value at a location  $X(i,j)$  is the average of a square submatrix centered at  $X(i,j)$ .

Nakajima et al. further teaches the first threshold value at a location  $X(i,j)$  is the average of a square submatrix ("window of  $m \times n$  pixels") centered at  $X(i,j)$  ("when  $m = n$ ", Col. 5 lines 10-20).

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berube et al. in view of de la Escalera et al. as applied to claim 1 above, and further in view of Gilbert et al. (US 4,143,264). The teachings of Berube et al. modified by de la Escalera et al. have been discussed above.

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As to claim 7, Berube et al. modified by de la Escalera et al. fails to disclose a second color criterion, where the first criterion is used in dim light conditions and the second criterion is used in bright light conditions.

Gilbert et al. teaches a second color criterion ("higher threshold"), where the first criterion ("lower threshold") is used in dim light conditions ("low ambient light") and the second criterion is used in bright light conditions ("higher ambient light", Col. 2 lines 9-25).

Therefore, in view of Gilbert et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Berube et al. and de la Escalera et al. by incorporating the higher and lower thresholds, as taught by Gilbert et al., used in low ambient light and higher ambient light to the color thresholding criteria of de la Escalera et al. in order to achieve an efficient sensitivity between natural sunlight and artificial light (Col. 1 lines 11-57).

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berube et al. in view of de la Escalera et al. as applied to claim 1 above, and further in view of Kim et al. (US 2001/0040982). The teachings of Berube et al. modified by de la Escalera et al. have been discussed above.

As to claim 10, Berube et al. modified by de la Escalera et al. fails to disclose recursively removing any invalid row and any invalid column from the segmentation matrix, where an invalid row contains less than a first threshold value of a binary value and an invalid column contains less than a second threshold value of the binary value.

Kim et al. teaches recursively removing any invalid row and any invalid column from the segmentation matrix ("binary grid image"), where an invalid row contains less than a first threshold ("defined threshold") value of a binary value and an invalid column contains less than a second threshold ("defined threshold") value of the binary value (Paragraphs [0028] and [0050]).

Therefore, in view of Kim et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Berube et al. and de la Escalera et al. by incorporating the method step of recursively removing any invalid row and any invalid column from the binary grid image, where an invalid row/column contains less than a first/second threshold of the binary value in order to optimize the minimum area to become the shape of the object (Paragraph [0050]).

11. Claims 15 and 16, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Berube et al. in view of de la Escalera et al. and Laumeyer as applied to claim 2 above, and further in view of Xia et al. (US 2001/0036300). The teachings of Berube et al. modified by de la Escalera et al. and Laumeyer have been discussed above.

As to claim 15, Berube et al. modified by de la Escalera et al. and Laumeyer fails to disclose scanning the matrix for an element with value 1 at position  $E(x,y)$ ; and performing a depth-first-search to find all elements with value 1 that are connected to  $E(x,y)$ .

Xia et al. teaches scanning the matrix for an element with value 1 ("binary transitions") at position  $E(x,y)$  ("P<sub>i</sub>"); and performing a depth-first-search to find all elements with value 1 that are connected to  $E(x,y)$  ("Rules", Paragraphs [0055]-[0069]).

Therefore, in view of Xia et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Berube et al., de la Escalera et al. and Laumeyer by incorporating the method step of scanning the matrix for an element with value 1 at position  $E(x,y)$ ; and performing a depth-first-search to find all elements with value 1 that are connected to  $E(x,y)$ , using the algorithm and rules as taught by Xia et al. in order to remove foreground pixels from background pixels to efficiently reduce the number of false connections (Paragraphs [0070] and [0071]).

As to claim 16, Berube et al. modified by de la Escalera et al. and Laumeyer fails to disclose setting the element at position  $E(x,y)$  to a unique identifier; and setting the value of the connected elements to the unique identifier.

Xia et al. teaches setting the element at position  $E(x,y)$  to a unique identifier ("1"); and setting the value of the connected elements to the unique identifier (FIGs. 4 and 5, Paragraph [0071]).

### ***Allowable Subject Matter***

12. Claims 11, 12, 20, 21, 23 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter: The closest prior art made of record fails to disclose or suggests the creation of the validating row and column vectors and the correlation between template vectors, the normalization of the submatrix and color criterion being expressed as the difference between two color components compared with the difference of one color component with the remaining color component, when a R, G, B color space is used.

### ***Response to Arguments***

#### **Objections to the Drawings**

14. Figure 3 has been amended to replace reference character "105" by reference character "310" and reference character "210" by reference character "311". Therefore, the objections have been removed.

Figure 5 has been amended to replace reference character "516" by reference character "513", and to correct the subscripts of reference characters "515" and "516" to " $X_1^1$ ", and " $X_1^2$ ", respectively. Therefore, the objections have been removed.

Figure 9 has been amended to replace reference character "204" by reference character "203". Therefore, the objection has been removed.

Figure 10B has been amended to include reference character "1005". Therefore, the objection has been removed.

Figures 10D and 10E have been amended to include reference character "1007". Therefore, the objections have been removed.

Figure 10F have been amended to include reference character "1007" appropriately and replace reference character "1007" by reference character "1008". Therefore, the objections have been removed.

Objections to the Specification

a. Informalities

15. Paragraph [015] has been amended to appropriately recite "FIGs. 10A-G" in line 1. Therefore, the rejection has been removed.

Paragraph [021] has been amended to replace reference character "108" in line 6 with reference character "106". Therefore, the rejection has been removed.

Paragraph [022] has been amended to replace reference character "109" in line 1 with reference character "106". Therefore, the objection has been removed.

Paragraph [025] has been amended to replace reference character "110" in line 4 with reference character "106". Therefore, the objection has been removed.

Paragraph [026] has been amended to replace reference character "111" in line 1 and reference character "112" in line 3, with reference character "106" on both instances. Therefore, the objections have been removed.

Paragraph [027] has been amended to replace reference character "113" in line 1 and reference character "114" in line 2, with reference character "106" on both instances. Therefore, the objections have been removed.

Paragraph [042] has been amended to replace reference character "309" in line 4 with reference character "311". Therefore, the objection has been removed.



Paragraph [050] has been amended to replace, " $S_1 = E(x_0^1, x_0^1; 1, n)$ " in lines 3-4 with " $S_1 = E(x_0^1, x_0^2; 1, n)$ ". Therefore, the objection has been removed.

Paragraph [056] has been amended to replace reference character "604" in line 1 with reference character "605". Therefore, the objection has been removed.

Paragraph [058] has been amended to replace reference character "604" in line 1 with reference character "608" and to replace reference character "605" in line 2 with reference character "608". However, from the Drawings it appears to be referring to "step 606" in line 1 and "step 608" in line 2. Therefore, the objections are maintained.

Paragraph [058] has been amended to replace reference character "607" in line 3 with reference character "608". Therefore, the objection has been removed.

Paragraph [059] has been amended to replace reference character "608" in line 1, and reference character "609" in line 3, with reference characters "609" and "610", respectively. Therefore, the objections have been removed.

Paragraph [060] has been amended to replace reference characters "604" with reference character "607" in lines 1 (both instances) and 3, and replace reference character "610" with reference character "612" in line 7. Therefore, the objections have been removed.

Paragraph [068] has been amended to replace reference character "708" in line 4, and reference character "709" in line 5, with reference characters "709" and "708", respectively. Therefore, the objections have been removed.

Paragraph [095] has been amended to clearly define the term OCR by adding "(Optical Character Recognition" in lines 1-2. Therefore, the objection has been removed.

b. Antecedent Basis

16. Proper antecedent basis for claim 6 has been found on Paragraph [073] as asserted by the Applicant on Page 13 of the First Response and Amendment. Therefore, the objection has been removed.

Claim 11 has been amended to properly define "a validating column/row vector", which finds support on Paragraph [055]. Therefore, the objection has been removed.

Claim Objections

17. Claim 8 has been cancelled. Therefore, the objection has been removed.

Claim 15 has been amended to correct sentence grammar in line 3 by replacing "the matrix for a element" with "the matrix for an element". Therefore, the objection has been removed.

Claim 17 has been amended to correct sentence grammar in line 7 by replacing "logic correlate at least one region" with "logic configured to correlate at least one region". Therefore, the objection has been removed.

Claim 18 has been amended to correct sentence grammar in line 3 by replacing "the method" with "the system". Therefore, the objection has been removed.

Claim Rejections under 35 U.S.C. § 101

18. Applicant has amended the specification to delete the words "electromagnetic" and "infrared" from Paragraph [026]. Therefore, the rejection has been removed.

Claim Rejections under 35 U.S.C. § 112

19. Claim 2 has been amended to recite "the at least one segmentation matrix" in line 3, and "the reference matrix" in line 6. Therefore, the rejection has been removed.

Claim 3 has been amended to recite "the at least one segmentation matrix" in line 3", and proper antecedent basis has been found in claim 1 for "the performing step". Therefore, the rejection has been removed.

Claim 5 has been amended to recite "the template matrix" in lines 2-3. Therefore, the rejection has been removed.

Claim 6 is dependant upon claim 5. Therefore, the rejection has been removed.

Claim 9 has been amended to recite "the segmentation matrix" in line 1. Therefore, the rejection has been removed.

Claim 10 has been amended to recite "the segmentation matrix" in lines 2-3. Therefore, the rejection has been removed.

Claim 12 has been amended to depend upon claim 2. Therefore, the rejection has been removed.

Claim 13 has been amended to depend upon claim 2. Therefore, the rejection has been removed.

Claim 14 has been cancelled. Therefore, the rejection has been removed.

Claim 15 has been amended to depend upon claim 2. However, this correction does not clarify the antecedent basis for the claim limitation "the matrix" in line 3. Therefore, the rejection is maintained.

Claim 16 is dependent upon claim 15. Therefore, the rejection is maintained.

*Claim Rejections under 35 U.S.C. § 102*

20. Applicant's arguments with respect to claims 1, 2, 7, 13, 14, 17 and 18 have been considered but are moot in view of the new ground(s) of rejection.

*Claim Rejections under 35 U.S.C. § 102*

21. Applicant's arguments with respect to claims 3-6, 8-12, 15 and 16 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Imao et al. disclose an Image Separator for Color Image Processing, Rosser et al. disclose a Pattern Recognitions System Employing Unlike Templates to Detect Objects Having Distinctive Features in a Video Field, Pöchmüller disclose a Method for the Displaying Information in a Motor Vehicle and Piccioli et al. disclose a Robust Road Sign Detection and Recognition from Image Sequences.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose M. Torres whose telephone number is 571-270-1356. The examiner can normally be reached on Monday thru Friday: 8:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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